

Criterion 3	Course Outcomes and Program Outcomes	175
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3.1 Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (25)

NBA defined Program Outcomes as mentioned in Annexure I and Program Specific Outcomes as defined by the Program.

Program Articulation Matrix

Regulation 2014

Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
U14ENG101	Technical English - I					2	2	2	3	3	3	3	3	2	2
U14MAT102	Multivariable Calculus and Matrices	3	3	3	3	1	1					1	2	2	2
U14PHY103	Engineering Physics	3	1	1									1	2	2
U14CHE104	Engineering Chemistry - I	3	1	1									1	1	1
U14BEE106	Basic Electrical and Electronics Engineering	3	3	3	3					2		2	2	3	3
U14FOC105	Fundamentals of Computing	2		2	1	2	1			2		1	1	2	2
U14PCL107	Physics & Chemistry Laboratory - I	1						1		2			1	1	1
U14CPL108	Computer Practice Laboratory														

		2	2	2	2	2	1			2			2	2	2
U14EPL109	Engineering Practices Laboratory	3	3	3	3					2		2	2	3	3
U14ENG201	Technical English – II					2	2	2	3	3	3	3	3	2	2
U14MAT202	Vector Calculus, Differential Equations and Complex Analysis	3	3	3	3	1	1					1	2	2	2
U14PHY203	Material Science	3	1	1									1	2	2
U14CHE205A	Chemistry for Electrical and Electronics Engineers	3	1	1									1	1	1
U14CPR206	Programming in C	2	2	2	2	2	1			2			2	2	2
U14EGR207	Engineering Graphics	2		2		1	1					1	1	1	1
U14PCL208	Physics & Chemistry Laboratory – II	3	1	1									1	1	1
U14CPL209	C Programming Laboratory	2	2	2	2	2	1			2			2	2	2
U14BEEL210	Basic Electrical and Electronics Engineering Laboratory	3	3	3	3					2		2	2	3	3
U14GE301A	Transforms and Partial Differential Equations	3	3	1	2								3	3	3
U14EC302	Electron Devices and Circuits	3	3	3	3	3	1			1	1	2	2	3	3

U14EE310	Electrical Engineering	3	3	2	2	2	2	2	2		2	2	2	1	1
U14EC303	Digital Electronics	3	3	3	3	1	1				1	2	2	3	3
U14EC304	Signals and Systems	3	3	3	3	1						2	2	3	3
U14CHE304	Environmental Science			1	1		3	3	3	3		1	2	1	1
U14GE302	Personality and Career Enhancement - I				1		2			3	3	3	3	2	2
U14EC305	Electronic Circuits Laboratory	2	2	2	2	1				2		3	1	3	3
U14EC306	Digital Electronics Laboratory	2	2	2	2	1				2		3	1	3	3
U14GE303	Communication Skills Laboratory	1	1			1	2	2	2	2	3	3	2	2	
U14MAT401C	Probability and Random Processes	3	2		1		1					2	1	2	2
U14EC401	Electromagnetic Field	3	2	2	3	1	1					2	1	3	3
U14EC402	Electronic Circuits	3	2	2	3	1	1					2	1	3	3
U14EC403	Linear Integrated Circuits	3	2	2	3	1	1					2	1	3	3
U14EE407	Control Systems	3	2	2	3	1	1					2	1	2	1
U14GE301A	Personality and Career Enhancement - II			1					3	3	3	1		1	1
U14EC404	Measurements and Instrumentation	3	3	3	2	1	1	2				2	2	3	3

U14EC405	Linear Integrated & Circuits Laboratory	3	3	3	3					3	1	3	1	3	3
U14EC406	Electronic Circuits and Simulation Laboratory	3	3	3	3					3	1	3	1	3	3
U14MAT501B	Numerical Methods for Engineering Computation	3	3	2	2	1	1					1	2	2	2
U14EC501	Analog Communication System	3	3	2	2	1	1					2	2	3	3
U14EC502	Digital Signal Processing	3	3	2	3	2	1					2	2	3	3
U14EC503	Transmission Lines and Waveguides	3	3	1	3	1	1						2	3	3
U14EC504	Microprocessor and its applications	3	1	3	2	2	1	2				2	2	3	3
U14EC505	Computer Networks	1	3	3	3	1	2					2	2	3	3
U14GE501	Personality and Career Enhancement - III			1					3	3	3	1		1	1
U14EC506	Microprocessor Laboratory	3	2	3	2	1	3				2	2	2	3	3
U14EC508	Computer Networks Laboratory	1	1	3	3	1		1		2			2	3	3
U14EC507	Digital Signal Processing Laboratory	3	2	3	2	3	2				2	2	2	3	3
U14EC601	Digital Image processing	3	3	3	3	3					2	2	2	3	3

U14EC602	Digital Communication	3	2	2	1	3					2	2	2	3	3
U14EC603	Antenna and Wave Propagation	3	3	3	3	3	1				2	2	2	3	3
U14EC604	VLSI Design	3	2	2	2	3	1				2	2	2	3	3
U14EC605	Micro controller and RISC Architecture	3		3		3	2				2	2	2	3	3
U14EC606	Medical Instrumentation	3				3	2				2	2	2	3	3
U14GE601	Personality and Career Enhancement - IV			1					3	3	3	1		1	1
U14EC607	Communication Laboratory (Analog, Digital and RF)	3	3	3	3	2				3		2	2	3	3
U14EC608	VLSI Laboratory	3	3	3	3	3				3		2	2	3	3
U14EC609	Digital Image Processing Laboratory	3	3	3	3	3				3		3	2	3	3
U14EC610	Mini Project	3	3	3	3	3	3	3	2	3	3	3	3	3	3
U14GE701	Professional Ethics and Human Values	1					3	3	3	3	3	2	2	1	1
U14EC701	Wireless Networks	3		1		2	2					2	2	3	3
U14EC702	Optical Fiber Communication	3		1	2							2	2	3	3
	Microwave	3	3	3	2	2		1				2	2	3	3

U14EC703	Engineering														
U14EC921	Elective – I Embedded and Real-time systems	3	1	3	1	3	3					3	3	3	3
U14EC920	Elective-III Nano Electronics.	3	1	3	1	3	3					3	3	3	3
U14EC704	Optical and Microwave Laboratory	3	3	2	1						2	3	3	3	3
U14EC705	Electronic System Design Laboratory	3	3	3	3	3	1					3	3	3	3
U14EC706	Project Work Phase - I	3	3	3	3	3	3	2	3	3	3	3	3	3	3
U14EC801	Cellular and Mobile Communication	3		1		3	2				1	2	2	3	3
U14EC802	Disaster Management	3	2			2	3	3	3	3	3	3	3	2	2
U14EC922	Elective Satellite Communication	3	2		2		1				2	2	2	3	3
U14EC925	Elective Telecommunication and Switching Networks	3		3		3	2				2	2	2	3	3
U14EC926	Elective Television and Video Engineering	1	1	2	3	3		2		1	3	1	1	3	3
U14EC803	Project Work Phase - II	3	3	3	3	3	3	2	3	3	3	3	3	3	3

Table B.3.1a

Course Articulation Matrix Regulation 2014

Course Code	Course Title	CO	Course Outcome Statements	P O 1	P O 2	P O 3	PO 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	PS O 1	PS O 2
U14ENG101	Technical English - I	CO1	Use Grammar components effectively in both written and spoken communication					2	2	2	3	3	3	3	3	2	2
		CO2	Develop and demonstrate good listening skills for academic and professional purposes					2	2	2	3	3	3	3	3	2	2
		CO3	Draw conclusions on explicit and implicit oral information					2	2	2	3	3	3	3	3	2	2
		CO4	Develop effective reading skills and reinforce the skills required for grammar and vocabulary building					2	2	2	3	3	3	3	3	2	2

		CO5	Read for gathering and understanding information and following directions					2	2	2	3	3	3	3	3	2	2
U14MAT102	Multivariable Calculus and Matrices	CO1	Determine Eigen vectors and reduce matrices from one form to another form	3	3	3	3	1	1					1	2	2	2
		CO2	Interpret curvature, calculate the radius of curvature, center of curvature and find the evolutes, involutes, envelope of curves and solve partial differentiation	3	3	3	3	1	1					1	2	2	2
		CO3	Work out functions of several variables, Jacobian's, Taylor's Theorem, compute the maximum & minimum values and Lagrange's Method	3	3	3	3	1	1					1	2	2	2

		CO4	Work out area of plane of region, length of the plane curve and area of surface of solid.	3	3	3	3	1	1					1	2	2	2
		CO5	Work out the double & triple integrals, discuss the change of order of integration, multiple integrals to find the area & volume	3	3	3	3	1	1					1	2	2	2
U14PHY103	Engineering Physics	CO1	Explain the theory of crystals, structure of crystals and defects in crystals	3	1	1									1	2	2
		CO2	Explain the theory of optoelectronics with applications	3	1	1									1	2	2
		CO3	Explain the concepts of electrodynamics as applicable to engineers	3	1	1									1	2	2
		CO4	Describe quantum mechanics theory and basic wave equations in	3	1	1									1	2	2

		CO5	Analyze different types of microscopes and discuss the theory of nanophysics	3	1	1								1	2	2
U14CHE104	Engineering Chemistry	CO1	Analyze the types of polymers, polymerization reactions, polymerization techniques and fabrication methods of polymers for engineering applications	3	1	1								1	1	1
		CO2	Discuss the basic principles of electrochemistry and its applications	3	1	1								1	1	1
		CO3	Analyze the types of corrosion and the various control methods for corrosion prevention	3	1	1								1	1	1
		CO4	Describe the construction, working principle and applications of energy storage device for electronic appliances	3	1	1								1	1	1

		CO5	Discuss the principles, advantages and applications of organic electronic materials used in electronic devices.	3	1	1									1	1	1
U14BEE106	Basic Electrical and Electronics Engineering	CO1	Explain the fundamentals of DC machines	3	3	3	3					2		2	2	3	3
		CO2	Explain the fundamentals of AC machines	3	3	3	3					2		2	2	3	3
		CO3	Explain the principles of Magnetic circuits	3	3	3	3					2		2	2	3	3
		CO4	Explain the basics of Electronics and details of Diode and Zener diode	3	3	3	3					2		2	2	3	3
		CO5	Evaluate various Number Systems and to realize the logic functions by using various gates	3	3	3	3					2		2	2	3	3

U14FOC105	Fundamentals of Computing	CO1	Examine the use of databases in the context of managing large amount of data	2		2	1	2	1			2		1	1	2	2
		CO2	Identify basic components of a computer system	2		2	1	2	1			2		1	1	2	2
		CO3	Explain from various viewpoints the purpose of Database Management Systems	2		2	1	2	1			2		1	1	2	2
		CO4	Apply knowledge of computing and mathematics appropriate to the discipline	2		2	1	2	1			2		1	1	2	2
		CO5	Analyze the local and global impact of computing on individuals, Organizations and society.	2		2	1	2	1			2		1	1	2	2
		CO1	Construct an experimental setup to form interference fringes and use it to determine the thickness of the given thin wire	1						1		2			1	1	1

U14PCL107	Physics & Chemistry Laboratory - I	CO2	Demonstrate by means of an appropriate experiment the poor thermal conductivity of a given bad conductor	1						1		2			1	1	1
		CO3	Estimate the amount of total, temporary and permanent hardness in the given sample of water	1						1		2			1	1	1
U14CPL108	Computer Practices Laboratory	CO1	Identify the different ports, peripherals of computer hardware	2	2	2	2	2	1			2			2	2	2
		CO2	Partition ,format hard disks and Install system software and application software	2	2	2	2	2	1			2			2	2	2
		CO3	Modify control panel settings, install antivirus software, backups, archival utilities and write in CD	2	2	2	2	2	1			2			2	2	2

U14EPL109	Engineering Practices Laboratory	CO1	Verify Ohm's Law, Kirchhoff's Law and measure power and power factor for RC, RL, RLC Series and Parallel circuit.	3	3	3	3					2		2	2	3	3
		CO2	Study the pipe connection requirements for pumps and turbines and demonstrate on basic machining	3	3	3	3					2		2	2	3	3
		CO3	Evaluate the VI Characteristics of PN Junction Diode, Zener Diode and verify the truth table for logic gates.	3	3	3	3					2		2	2	3	3
U14ENG201	Technical English – II	CO1	Frame sentences correctly, both in written and spoken forms of language with accuracy and fluency					2	2	2	3	3	3	3	3	2	2
		CO2	Introduce themselves deliver speeches and make technical presentation					2	2	2	3	3	3	3	3	2	2

		CO3	Speak effectively in real time and business situations					2	2	2	3	3	3	3	3	2	2
		CO4	Draft emails, formal letters and Resume					2	2	2	3	3	3	3	3	2	2
		CO5	Write reports and proposals, memos and checklists					2	2	2	3	3	3	3	3	2	2
U14MAT202	Vector Calculus, Differential Equations and Complex Analysis	CO1	Work out on different types of ordinary differential equations and use various methods to solve differential equations	3	3	3	3	1	1					1	2	2	2
		CO2	Compute vector functions, operators and use different methods of solving line, surface and volume integrals.	3	3	3	3	1	1					1	2	2	2
		CO3	Describe special features of function of a complex variable, Properties and solve the problems involving conformal mapping.	3	3	3	3	1	1					1	2	2	2

		CO4	Work out the power series expansion of a complex function and the procedures of evaluating the complex integral.	3	3	3	3	1	1					1	2	2	2
		CO5	Work out problems on Laplace transform its inverse, properties and solve an ordinary Differential equation using Laplace transforms.	3	3	3	3	1	1					1	2	2	2
U14PHY203	Material Science	CO1	Distinguish between electrical and thermal conductivity based on classical free electron theory of solids and apply Fermi distribution function to calculate carrier concentration in metals.	3	1	1									1	2	2
		CO2	Differentiate intrinsic and extrinsic semiconductors, analyze the variation of Fermi level with temperature and apply Hall effect to determine the nature of charge	3	1	1									1	2	2

			carriers.														
		CO3	Discuss the properties and applications of magnetic and super conducting materials.	3	1	1									1	2	2
		CO4	Explain the different types of polarization process in dielectric materials, their frequency and temperature dependence and discuss the causes of dielectric breakdown	3	1	1									1	2	2
		CO5	Describe metallic glasses and shape memory alloys and explain the synthesis, properties and applications of nano materials and carbon nano tubes	3	1	1									1	2	2

U14CHE205 A	Chemistry for Electrical and Electronics Engineers	CO1	Analyze the types of polymers, polymerization reactions, polymerization techniques and fabrication methods of polymers for engineering applications.	3	1	1									1	1	1
		CO2	Describe the importance of various types of food products and their biological importance.	3	1	1									1	1	1
		CO3	Discuss the role of Chemistry in day to day life.	3	1	1									1	1	1
		CO4	Identify the various types of fuels, and explain their chemical compositions, properties and applications in engineering field.	3	1	1									1	1	1

		CO5	Outline the principle of organic electronic materials and its applications in the fabrication of electronic devices.	3	1	1									1	1	1
U14CPR206	Programming in C	CO1	Develop C Programs using basic programming concepts	2	2	2	2	2	1			2			2	2	2
		CO2	Develop C programs using arrays and strings	2	2	2	2	2	1			2			2	2	2
		CO3	Develop applications in C using functions , pointers and structures & input/output and file handling in C	2	2	2	2	2	1			2			2	2	2
		CO4	Write C program for simple applications of real life using structures and files	2	2	2	2	2	1			2			2	2	2

		CO5	Explain role of Operating system in computer system and applications of computer networks	2	2	2	2	2	1			2			2	2	2
U14EGR207	Engineering Graphics	CO1	Develop in student's graphic skill for communication of concepts, ideas and design of engineering products	2		2		1	1					1	1	1	1
		CO2	Develop special curves such as polygons helices and screw threads	2		2		1	1					1	1	1	1
		CO3	Develop the different shapes of machine components	2		2		1	1					1	1	1	1
		CO4	Create drawings for fabricating boilers, chimneys, ducts and machine structures	2		2		1	1					1	1	1	1
		CO5	Develop the solids and surfaces	2		2		1	1					1	1	1	1

U14PCL208	Physics & Chemistry Laboratory – II	CO1	Demonstrate the application of a diode laser to determine the characteristics of a given optical fibre	3	1	1									1	1	1
		CO2	Demonstrate the estimation of hydrochloric acid present in the given solution using pH meter	3	1	1									1	1	1
		CO3	Estimate the mixture of acids by conductometry	3	1	1									1	1	1
U14CPL209	C Programmin g Laboratory	CO1	Develop C Programs using basic programming concepts	2	2	2	2	2	1			2			2	2	2
		CO2	Develop C programs using arrays and strings	2	2	2	2	2	1			2			2	2	2
		CO3	Develop applications in C using functions , pointers and structures & input/output and file handling in C	2	2	2	2	2	1			2			2	2	2

U14BEEL2 10	Basic electrical and electronics Engineering Laboratory	CO1	Design and analyze the RLC series and parallel resonance circuits	3	3	3	3					2		2	2	3	3
		CO2	Analyze the circuits using Kirchoff's law.	3	3	3	3					2		2	2	3	3
		CO3	Implement the logic function using logic gates and study the various functions of three phase AC circuits.	3	3	3	3					2		2	2	3	3
		CO1	Construct the Fourier series to solve the initial and boundary value problems	3	3	1	2								3	3	3
		CO2	Form partial differential equations and solve standard types of first order PDE and linear PDE of second order with constant coefficients	3	3	3	2								3	3	3

U14GE301A	Transforms and Partial Differential Equations	CO3	Prove the properties of the Z- transform, apply convolution theorem to various functions and solve the difference equations.	3	3	1	2							3	3	3	
		CO4	Apply and solve vector spaces for different applications, explain linear independence and dependence of vectors and dimension of vector spaces	3	3	3	2							3	3	3	
		CO5	Classify the quasi linear PDE and solve one dimensional wave equations and two dimensional heat equation	3	3	1	2							3	3	3	
U14EC302	Electron Devices and Circuits	CO1	Understand the construction and modeling of semiconductor diodes and field-effect transistors	3	3	3	3	3	1			1	1	2	2	3	3
		CO2	Select the biasing circuits based on load line analysis.	3	3	3	3	3	1			1	1	2	2	3	3

		C03	Perform mid band analysis of BJT and FET amplifiers.	3	3	3	3	3	1			1	1	2	2	3	3
		C04	Analyze the frequency response of BJT and FET amplifiers and compute gain bandwidth product.	3	3	3	3	3	1			1	1	2	2	3	3
		C05	Compare the large signal amplifiers with respect to distortions and thermal stability.	3	3	3	3	3	1			1	1	2	2	3	3
U14EE310	Electrical Engineering	C01	Analyse D.C. Machines, starters and Speed control of D.C. shunt motors.	3	3	2	2	2	2	2	2		2	2	2	1	1
		C02	Analyse the operation and construction of Transformers.	3	2	2	2	2	2	2	2		2	2	2	1	1
		C03	Design three phase induction motors.	3	2	2	2	2	2	2	2		2	2	2	1	1
		C04	Describe stepper motor, synchronous and special machines.	3	2	2	2	2	2	2	2		2	2	2	1	1

		CO5	Develop EHVAC and transmission systems. EHVDC	3	2	2	2	2	2	2	2		2	2	2	1	1
U14EC303	Digital Electronics	CO1	Identify different number system and its conversion; simplify Boolean expressions by different methods and implementation using logic gates.	3	3	3	3	1	1				1	2	2	3	3
		CO2	Design and implement combinational circuits using basic logic gates	3	3	3	3	3	1				1	2	2	3	3
		CO3	Design synchronous sequential circuits using flip flops.	3	3	3	3	2	1					2	2	3	3
		CO4	Design counters, registers and asynchronous sequential logic	3	3	3	3	2	1					2	2	3	3
		CO5	Design and implement asynchronous sequential circuits and explain the need for hazards.	3	3	3	3	3	1					2	2	3	3

U14EC304	Signals and Systems	CO1	Perform multiple operations on CT and DT signals and analyse the characteristics of continuous and discrete time systems.	3	3	3	3	1						2	2	3	3
		CO2	Apply Fourier series and Fourier Transform on CT signals and systems	3	3	3	3	1						2	2	3	3
		CO3	Analyse linear time invariant CT system.	3	3	3	3	1						2	2	3	3
		CO4	Apply DTFT and Z transform on DT signals and systems	3	3	3	3	1						2	2	3	3
		CO5	Analyze linear time invariant DT system.	3	3	3	3	1						2	2	3	3
		CO1	Describe natural resources and energy resources.			1	1		3	3	3	3		1	2	1	1

U14CHE304	Environmental Science and Engineering	CO2	Analyze ecosystems and biodiversity.			1	1		3	3	3	3		1	2	1	1
		CO3	Identify control measures to avoid environmental pollution			1	1		3	3	3	3		1	2	1	1
		CO4	Analyze social issues related to environmental ethics.			1	1		3	3	3	3		1	2	1	1
		CO5	Analyze the role of Information technology in environment and human health.			1	1	3	3	3	3	3		1	2	1	1
		CO1	Analyze diagnostic tests for communication, aptitude, verbal & employability and assess SWOT Analysis				1		2			3	3	3	3	2	2

U14GE302	Personality and Career Enhancement - I	CO2	Develop soft skills, Career guidance transactional analysis and resume writing.				1		1			2	3	3	3	2	2
		CO3	Develop time management and stress management				1		2			3	3	3	3	2	2
		CO4	Develop interpersonal skills and team work				1		2			3	3	3	3	2	2
		CO5	Develop meditation technique, communication castle and unscramble role play.				1		2			3	3	3	3	2	2
U14EC305	Electronic Circuits Laboratory	CO1	Operate electronic test equipment and hardware tools and to use the same for conducting experiments.	2	2	2	2	1				2		3	1	3	3
		CO2	Draw and analyze VI characteristics of various diodes.	2	2	2	2	1				2		3	1	3	3
		CO3	Analyze the input and output characteristics of various transistors and plot the frequency response of amplifier circuits.	2	2	2	2	1				2		3	1	3	3

U14EC306	Digital Electronics Laboratory	CO1	Design and implement combinational circuit using logic gates	2	2	2	2	1				2		3	1	3	3
		CO2	Design and develop various functional for sequential and combinational circuits.	2	2	2	2	1				2		3	1	3	3
		CO3	Develop Verilog HDL code for combinational and sequential circuits.	2	2	2	2	1				2		3	1	3	3
U14GE303	Communication Skills Laboratory	CO1	Demonstrate active listening skills	1					1	2	2	3	3	2	2		
		CO2	Read fluently and comprehend the given texts.		2	1				2		3			2		
		CO3	Make power point presentations and perform effectively in interviews and group discussions.	1	1			1		2		2			2	2	
		CO1	Explain the concepts of moments and its properties	3	2		1		1					2	1	2	2
		CO2	Estimate the covariance correlation and regression of random variables	3	2		1		1					2	1	2	2

U14MAT401 C	Probability and Random Process	CO3	Classify the random process with examples	3	2		1		1					2	1	2	2
		CO4	Analyze the concept of power spectral density and cross spectral density	3	2		1		1					2	1	2	2
		CO5	Analyze the response of random variables to LTI system.	3	2		1		1					2	1	2	2
U14EC401	Electromagn etic Fields	CO1	Solve the Maxwell's equation using vector calculus using 3 standard coordinate system.	3	2	2	3	1	1					2	1	3	3
		CO2	Apply vector calculus to solve static electric field problems for different engineering applications.	3	2	2	3	1	1					2	1	3	3
		CO3	Apply vector calculus to solve static magnetic field problems for different engineering applications.	3	2	2	3	1	1					2	1	3	3
		CO4	Analyze and compute the power flow mechanism in bounded and unbounded medium.	3	2	2	3	1	1					2	1	3	3

		CO5	Deduce EM wave propagation in free space and dielectric medium.	3	2	2	3	1	1					2	1	3	3
U14EC402	Electronic Circuits	CO1	Identify the feedback topology for the given circuit.	3	2	2	3	1	1					2	1	3	3
		CO2	Design a sine wave generator using LC and RC network.	3	2	3	3	1	1					2	1	3	3
		CO3	Analyse the performance of different types of tuned amplifiers.	3	2	2	3	1	1					2	1	3	3
		CO4	Design Wave shaping circuits for specific application.	3	2	3	3	1	1					2	1	3	3
		CO5	Describe the different types of blocking oscillators.	3	2	2	3	1	1					2	1	3	3
		CO1	Analyze the AC and DC characteristics of Op-Amp.	3	2	2	3	1	1					2	1	3	3

U14EC403	Linear Integrated Circuits	CO2	Design Op-Amp circuit for linear applications	3	2	3	3	1	1					2	1	3	3
		CO3	Design Op-Amp circuit for non-linear applications and signal generation.	3	2	3	3	1	1					2	1	3	3
		CO4	Analyze voltage reference circuits, regulators and design circuits using analog multipliers.	3	2	3	3	1	1					2	1	3	3
		CO5	Analyze the working of different types of ADC, DAC and PLL.	3	2	2	3	1	1					2	1	3	3
U14EE407	Control Systems	CO1	Find the transfer functions using block diagram reduction techniques and signal flow graph.	3	2	2	3	1	1					2	1	2	1
			Analyze the time domain specifications of first order System and														
		CO2		3	2	2	3	1	1					2	1	2	1